ESCORT

SERVICE MANUAL

1000/2000

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ESCORT 1000/2000 OPERATOR'S MANUAL

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1.0 INTRODUCTION

1.1 DISTINCTIVE FEATURES

ESCORT has many distinctive features but three features are particularly unique:

* ESCORT can be configured at the factory to work with almost any type of ECG telemetry transmitter available today. Consequently ESCORT can usually be configured to work with your existing transmitters.

* ESCORT has a multi channel receiver that permits you to select and monitor any one (ESCORT 1000) or any two (ESCORT 2000) of up to 360 telemetry patients. The number of patients that the ESCORT can select varies with the type of transmitter used.

* ESCORT is very compact and includes an option for battery power operation which permits portable applications.

The ESCORT 1000 is a dual trace single channel ECG monitor which receives ECG via telemetry. The ESCORT 2000 is a dual trace, dual channel, telemetry ECG monitor. The two models operate similarly. The major difference between the two models is that the ESCORT 1000 monitors one patient at a time and the ESCORT 2000 monitors two patients simultaneously.

The ESCORT 1000/2000 is designed to minimize the number of key functions which confront the user at any one time. Some keys (fixed function keys) are visible and functioning at all times. Other less frequently used key functions are visible and functioning only on an as needed basis. The four variable function keys are called "softkeys". The four softkeys are located immediately below the display screen. Labels for the four softkeys are displayed on the screen . Softkey labels are located above each respective soft key.

1.2 SYSTEM CONFIGURATIONS AND OPTIONS

The ESCORT 1000 (single patient) and the ESCORT 2000 (dual patient) can be configured at the factory to receive telemetry ECG from almost any telemetry transmitter currently available. Some monitoring features may or may not be provided depending upon the capabilities and transmission techniques of the transmitter. Low battery, lead fail, remote record, and cal are all features with signals that normally originate at the transmitter. See TABLE 1 to determine feature compatibility between ESCORT and the various transmitters.

TRANSMITTER	LOW BAT	REMOTE RECORD	LEAD FAIL	CAL
ABBOTT TR4	NO	NO	NO	NO
ANTEK	NO	NO	NO	NO
BURDICK/KONE	YES	YES	NO	YES
DATASCOPE	YES	YES	NO	YES
EforM/HONEYWELL TT31	YES	YES	NO	YES
GE PDS 3020	YES	YES	NO	NO
GE 3100	NO	NO	NO	NO
HP 78100	NO	NO	YES	NO
LITTON/DATAMEDIX TLT	YES	YES	NO	YES
LSE/QUITON	NO	NO	NO	NO
MARCOM/PHYSIO/MAD	NO	NO	NO	NO
MARQUETTE 9416	NO	NO	NO	NO
MDE ESCORT 1100	YES	YES	NO	YES
MENNEN 419	YES	NO	NO	YES
NIHON KOHDEN 311	NO	NO	NO	NO
NIHON KOHDEN 632/654	NO	NO	NO	NO
SIEMENS 400	YES	YES	NO	YES
SPACELABS 200	NO	NO	NO	NO
SPACELABS 300	YES	NO	NO	NO
SPACELABS 310	YES	YES	NO	NO

TABLE 1
TRANSMITTER FEATURE TABLE
(YES: SIGNAL SUPPORTED)

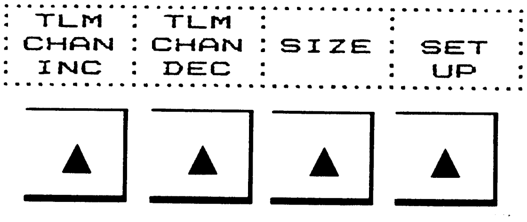
In many applications the ESCORT 1000/2000 will be used to receive ECG signals from the customer's existing transmitters. For example, the ESCORT 1000/2000 can be brought to a telemetry patient's bedside to monitor the patient in parallel with the hospital's primary monitoring system located at the central station. In this situation ESCORT provides bedside monitoring with no need for additional patient cables or electrodes.

1.3 SAFETY CONSIDERATIONS

When operating ESCORT from an AC power source, the wall receptacle must be a three-wire, grounded, hospital grade outlet. Since the ESCORT 1000/2000 is a telemetry monitor, all patient contact is via the battery powered transmitter. Consequently, patient isolation is guaranteed. If the ESCORT 1000/2000 is used in the presence of flammable anesthetics , a possible explosion hazard exists. Never remove ESCORT's enclosure panels since dangerous high voltage would be exposed. Always refer servicing to qualified personnel.

2.0 CONTROLS AND INDICATORS

2.1 FRONT PANEL



The function of each of the four soft keys is defined by the label displayed above the soft key. The "soft keys" are the four (4) green arrow keys below the CRT screen. Press to activate. The soft key label will blank momentarily to echo your key depression.

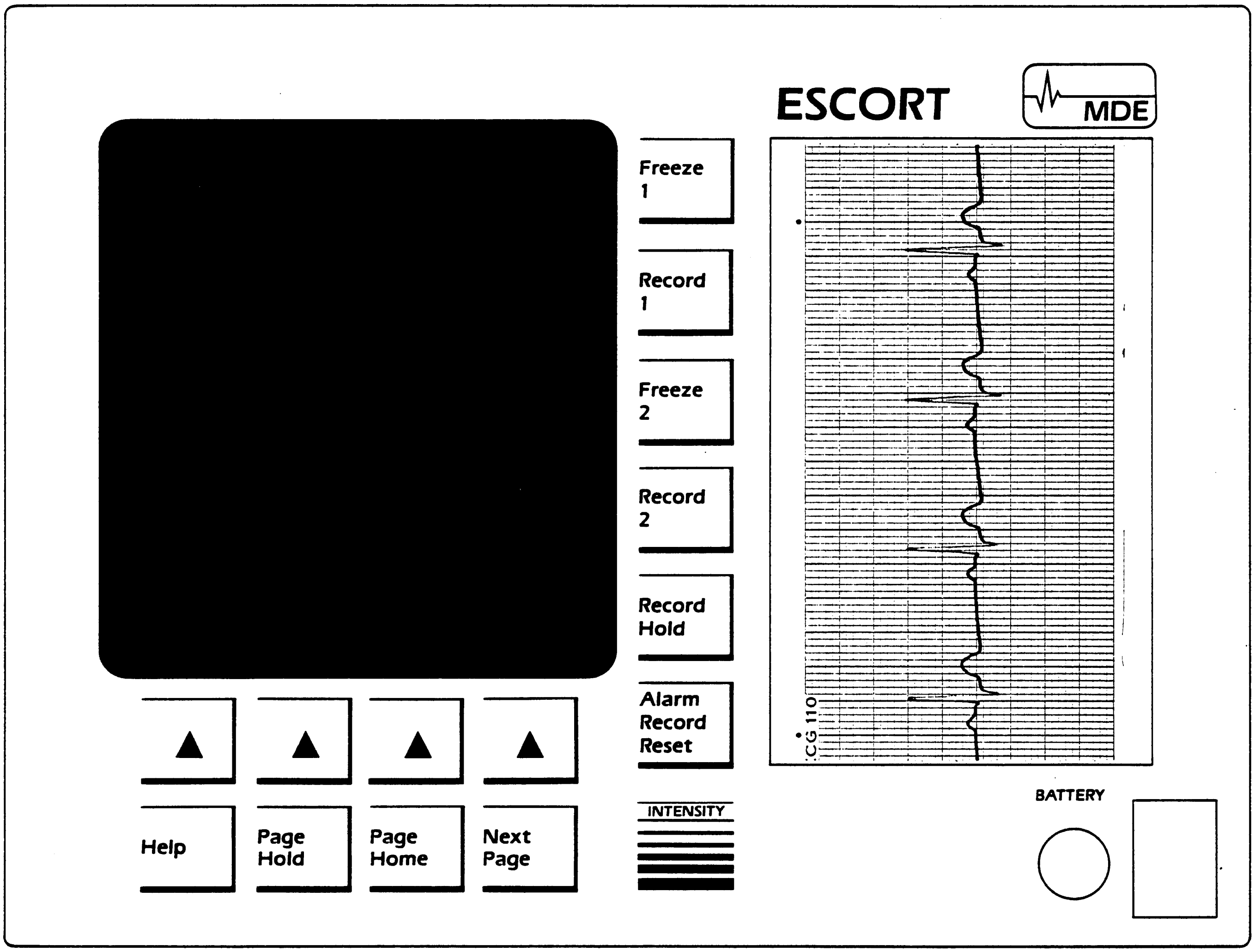

ESCORT
MDE
Freeze 1
Record 1
Freeze 2
Record 2
Record Hold
Alarm Record Reset
INTENSITY
Help
Page Hold
Page Home
Next Page
BATTERY
CG 110

FIGURE 1
ESCORT FRONT PANEL

Help

When you press this key, ESCORT responds with the following message:

```
FOR HELP. SELECT KEY
```

At this time press the key for which you need help. See the SUPPLEMENTARY PROCEDURES section for more details.

Page Hold

Freezes the current softkey page for up to 60 minutes. A 'page' is a group of four soft keys displayed at one time on the screen. If you do not press the PAGE HOLD key ESCORT will automatically return to HOME (page 1) within 60 seconds. When ESCORT is in PAGE HOLD mode, the intensity of the soft key borders is increased and the following message is displayed:

```
KEYS IN PAGE HOLD
```

PAGE HOLD is released by pressing the NEXT PAGE, PAGE HOME, or any other soft key that prompts a new softkey page.

Page Home

Returns ESCORT to the HOME PAGE. The HOME PAGE is the softkey page that is normally displayed while monitoring a patient.

Next Page

Indexes, or turns, to the next softkey page. If the ESCORT is at the last page, NEXT PAGE will return ESCORT to PAGE HOME.

Freeze 1

If only one patient is monitored, the upper trace automatically cascades to the lower trace. If you press FREEZE 1, the upper trace will freeze on the lower trace, and the upper trace will continue to display moving real time ECG. If two patients are being monitored (ESCORT 2000 only) , FREEZE 1 will freeze the upper trace. In either case, FREEZE is released by pressing either the FREEZE or RECORD key associated with the frozen trace.

Record 1

Initiates a 16 second recording of the upper trace with 12 seconds of delay time memory. See the SUPPLEMENTARY PROCEDURES section on Recording for details.

Freeze 2

Similar to FREEZE 1 except that the lower trace waveform is frozen.

Record 2

Initiates a 16 second recording of the lower trace with 12 seconds of delay time memory. If the ESCORT is in cascade mode, RECORD 1 and RECORD 2 are equivalent in function.

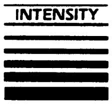
Record Hold

If the ESCORT is in cascade mode, RECORD HOLD will initiate a recording and continue to record indefinitely. If an ESCORT 2000 is monitoring two patients, you must first press either RECORD 1 or RECORD 2 before pressing RECORD HOLD. The ESCORT will display the following message:

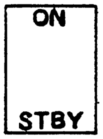
```
REC IN CONT RUN MODE
```

Alarm
Record
Reset

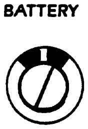
Stops the recorder. If the recorder is automatically initiated by alarm, then the ALARM RECORD RESET key will reset the alarm tone and recorder for 60 seconds. If after 60 seconds the heart rate is still in violation, ESCORT will again turn on both the alarm tone and the recorder. ESCORT will automatically turn on the alarm tone and recorder if there is a heart rate transition from outside a limit during the 60 second ALARM RECORD RESET period. When both traces of the ESCORT 2000 are in alarm, the ALARM RECORD RESET key resets alarms in order of their occurrence.



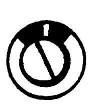
Increases the display brightness. Screen intensity range is divided into 8 steps or levels. At the maximum level the intensity rolls over to the minimum level. Press and hold the key to automatically step.



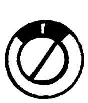
Turns the display on and initializes ESCORT. With the switch in the STBY position ESCORT is OFF, but the battery will continue to charge if ESCORT is connected to AC power and the rear panel AC ON/OFF switch is ON.



Indicates ESCORT's battery level:



BATTERY REQUIRES CHARGING



BATTERY IS FULLY CHARGED

NOTE

Battery level indicator is valid only when the front panel ON/STBY switch is ON and ESCORT is not connected to AC power. When fully charged, the internal battery will power the ESCORT 1000 for 1 hour. A fully charged battery will power the ESCORT 2000 for 30 minutes when monitoring one or two patients.

2.2 REAR PANEL

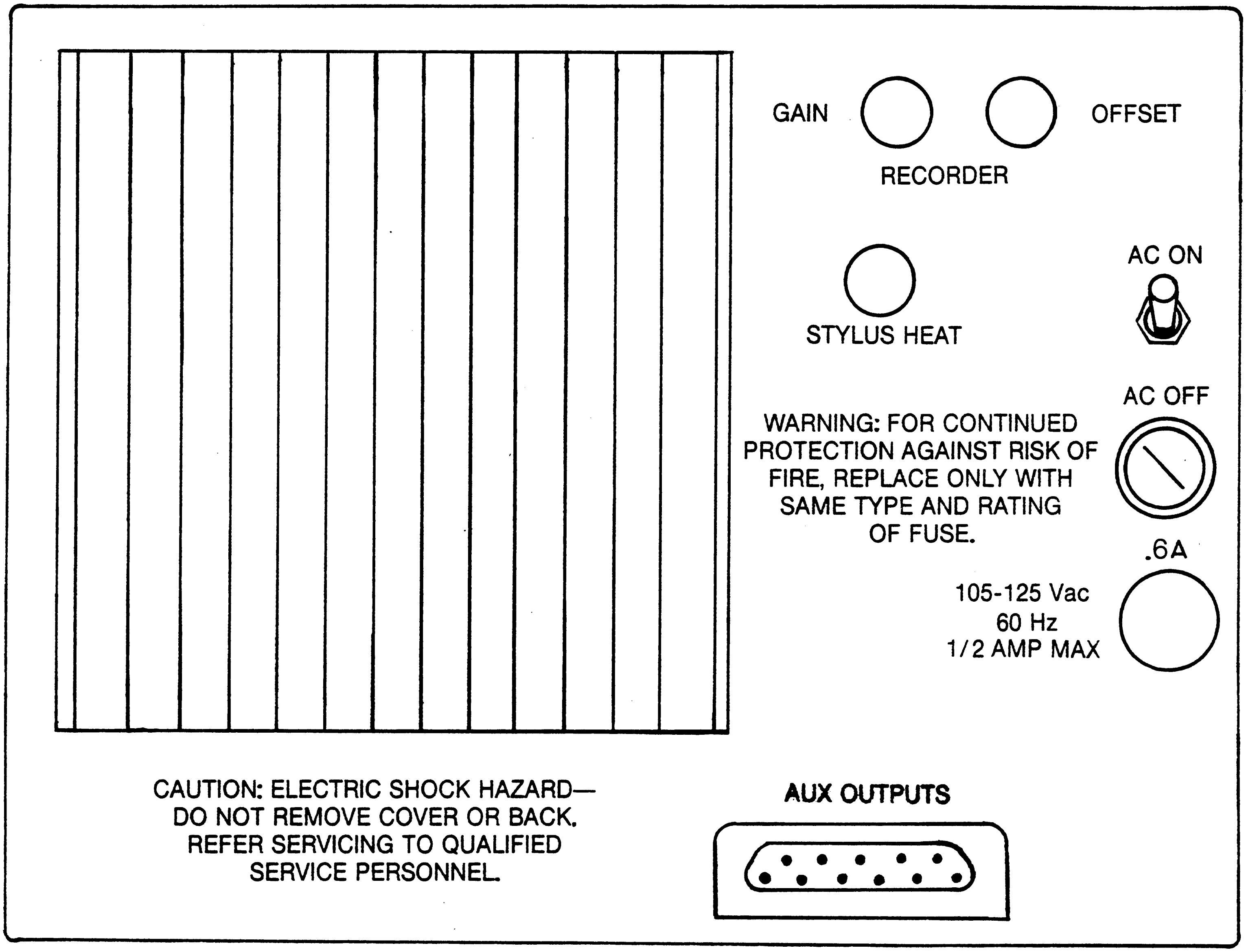

GAIN
OFFSET
RECORDER
STYLUS HEAT
AC ON
AC OFF
WARNING: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.
.6A
105-125 Vac
60 Hz
1/2 AMP MAX
CAUTION: ELECTRIC SHOCK HAZARD— DO NOT REMOVE COVER OR BACK. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
AUX OUTPUTS

FIGURE 2
REAR PANEL CONTROLS

STYLUS HEAT

Controls stylus temperature. Turn clockwise to increase temperature. It is normal for the stylus to take as much as two seconds to reach final writing temperature after initiation of the recording. Adjust the stylus heat to obtain optimal trace quality after the recorder has run for two seconds.

RECORDER OFFSET

Controls recorder offset position. Turn clockwise to increase.

RECORDER GAIN

Controls recorder gain. Turn clockwise to increase recording size. Use in conjunction with ESCORT's CAL softkey to obtain calibrated ECG recordings.

FUSE

Replace with .6 Amp, slo-blow, 120 Vac fuse

AC ON / AC OFF

Switches AC power to monitor. Power switch must be ON and the power cord plugged into wall outlet before battery can be charged. This switch is normally left on at all times.

AUXILLARY CONNECTOR

Provides interface signals for devices such as remote recorders and slave scopes.

ANTENNA

One antenna is required for each receiver channel. The antenna can be kept in its retracted position for close range monitoring, and raised when extended range monitoring is required.

3.0 DISPLAY FORMAT AND SYSTEM MESSAGES

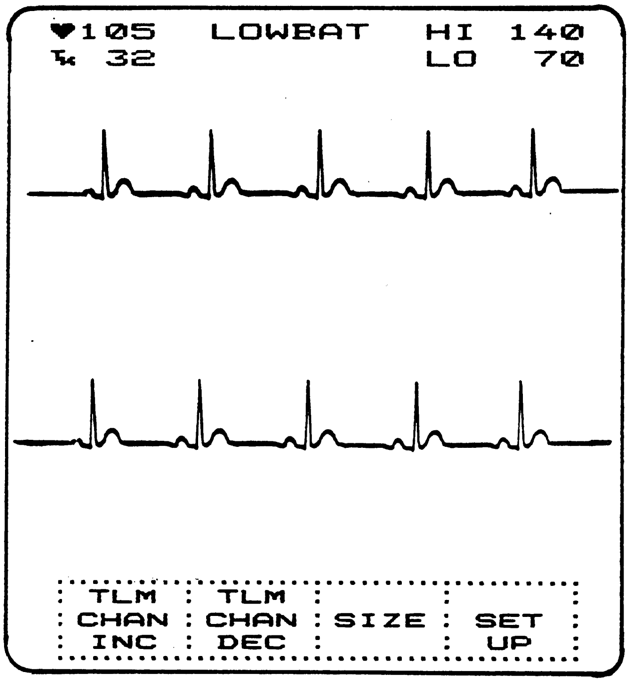

105
LOWBAT
HI 140
32
LO 70
TLM CHAN INC
TLM CHAN DEC
SIZE
SET UP

FIGURE 3A
SINGLE PATIENT DISPLAY FORMAT
ESCORT 1000

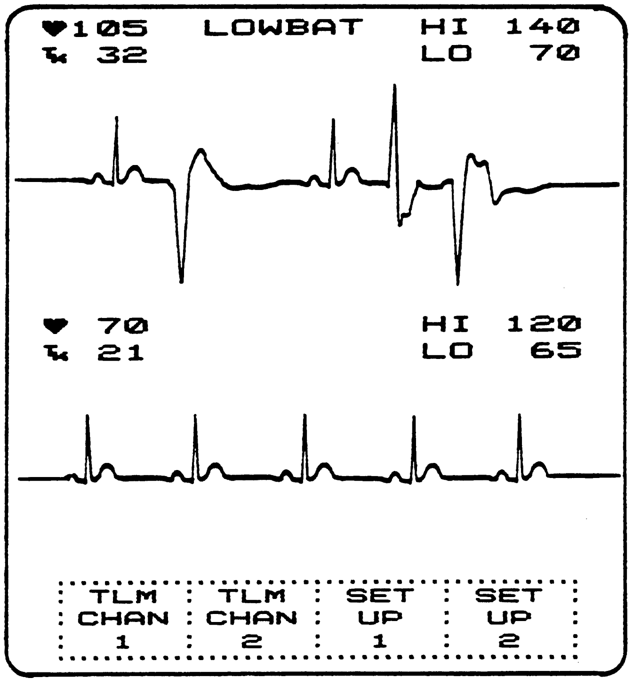
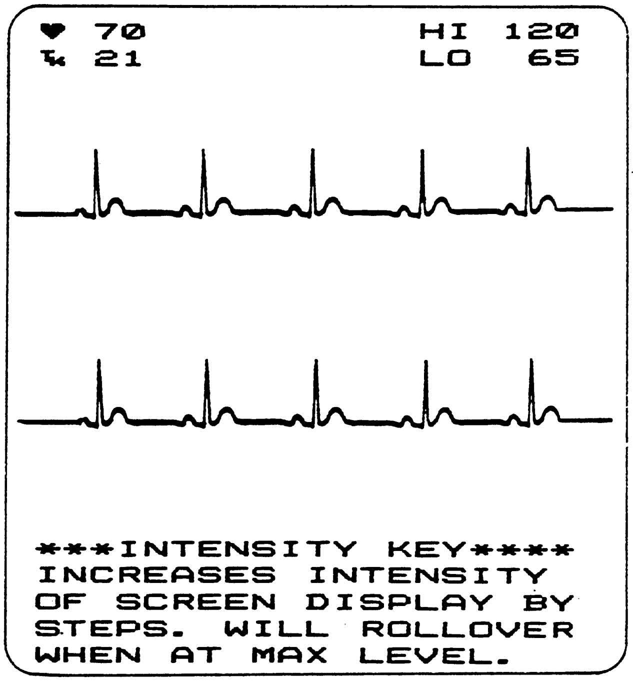

105
LOWBAT
HI 140
32
LO 70
70
HI 120
21
LO 65
TLM CHAN 1
TLM CHAN 2
SET UP 1
SET UP 2

FIGURE 3B
DUAL PATIENT DISPLAY FORMAT
ESCORT 2000



INTENSITY KEY*
INCREASES INTENSITY
OF SCREEN DISPLAY BY
STEPS. WILL ROLLOVER
WHEN AT MAX LEVEL.

FIGURE 3C
DISPLAY FORMAT IN HELP MODE

Alarm limits are displayed whenever alarms are ON . ESCORT also displays alarm limits when you select the ALM LIM softkey to adjust limits.

Messages are displayed in two areas of the screen. Messages that are trace specific (1 or 2) and no more than six characters in length are displayed in the parameter line between HR and alarm limits.

MESSAGE	MEANING
RECORD	Recorder is running. The location (upper or lower trace) of the RECORD message indicates which trace (1 or 2) is recording
LOWBAT	Telemetry transmitter battery level is low and should be replaced
SIGNAL	ECG telemetry signal is weak or absent
LDFAIL	Insufficient, or total loss of, electrode or lead wire contact

All other messages are displayed on the system message line which is located immediately above the soft keys. Some messages, called reminder messages, are momentarily displayed if you press an inappropriate key. All other messages are displayed for as long as conditions and message priority dictates. Reminder messages have the highest priority and therefore may momentarily preempt another message. Messages and their meaning are listed below in order of priority level:

USE SETUP 1 OR 2 KEY

Displayed if you press the NEXT PAGE key instead of either SETUP 1 or SETUP 2 key (ESCORT 2000 only).

RECORDER IS OFF

Displayed if you press RECORD 1 or RECORD 2 key when the recorder has been turned off.

USE REC1 OR REC2 KEY

Displayed if you press the RECORD HOLD key without first having pressed either the RECORD 1 or RECORD 2 key. This message only applies to the ESCORT 2000 and only when the ESCORT 2000 is monitoring two patients.

SCAN DISABLES ALARMS

Displayed when you try to turn alarm on for a trace (1 or 2) that is in the SCAN mode. Alarms can not be turned on when in the SCAN mode.

REC DISABLES FREEZE

Displayed when you try to freeze an ECG trace that is currently being recorded. The ESCORT will not permit an ECG trace to be frozen if it is being recorded.

SET TLM CHAN# STOPS

Displayed when you try to turn on the SCAN mode or press a CHAN INC/DEC key when all TLM channel stops have been cleared. Both the automatic SCAN mode and the manual CHAN INC/DEC mode of TLM channel selection require that at least one TM channel stop be set.

KEYS IN PAGE HOLD

Displayed when you press the PAGE HOLD key to hold at the current softkey page. If PAGE HOLD is not in effect ESCORT will automatically return to PAGE HOME after 60 seconds of no key selections.

TURN TRACE 1 ON
TURN TRACE 2 ON

Displayed by ESCORT 2000 only. ESCORT will display this message if you press the SETUP 1 key when trace 1 is OFF and likewise with trace 2.

FOR HELP, SELECT KEY

Displayed after you press the HELP key. Indicates that you should select the key with which you need help.

REC IN CONT RUN MODE

Displayed after you press the RECORD HOLD key. Indicates that the recorder will run continuously.

TRACE1 ALM/REC RESET
TRACE2 ALM/REC RESET

Displayed if you press the ALARM RECORD RESET key when trace 1 and/or 2 is in alarm. The message is displayed for as long as the alarm is reset (up to 60 seconds).

Displayed when
you must press t
the FREEZE 2 key
the associated R

Displayed by ESC
2 key, ESCORT w
the trace you ar

4.0 ESCORT PREPA

4.1 BATTERY AND

The ESCORT 1000,
with the batte
Operating time
1000 and 30 min
operating times
battery level,
unplug ESCORT fr
in the GREEN are
the ESCORT's po
automatically ch